



September 15, 2017

Mr. Anthony Krone
Risk Manager
Shelby County Schools
160 South Hollywood – Room 152
Memphis, Tennessee 38112

**RE: Lead in Drinking Water Sampling
 Whitehaven Elementary School
 4851 Elvis Presley Boulevard
 Memphis, Tennessee
 Tioga Project No.: 24816.01**

Dear Mr. Krone,

At the request of Shelby County Schools (the Client), Tioga Environmental Consultants (Tioga) performed sampling of drinking water sources at Whitehaven Elementary School for laboratory analysis of total lead concentrations.

As preliminary sampling of select water sources at this school revealed the potential for elevated lead levels in the potable water system, Tioga recommended additional sampling of all water fountains in the school to determine the extent of the issue. Following the receipt of the laboratory analytical results from the initial sampling event, Tioga informed Shelby County Schools Risk Management personnel, who instructed maintenance personnel to take the water fountains at this school out of service pending further testing.

Prior to this additional sampling event, the water fountains throughout the school had been shut off for approximately four days. Sampling was conducted early in the morning, before any potable water sources had been used for the day and prior to the arrival of any students or faculty. Maintenance personnel reactivated the water fountains immediately prior to sampling, and the water fountains were deactivated and taken out of service immediately following the sampling.

On September 12, 2017, Tioga representative Eric Davis arrived onsite and was escorted through the building by Shelby County Schools personnel. First-draw potable water samples were collected in accordance with the Environmental Protection Agency (EPA) regulations codified in 40 CFR 141.86, and were documented and transferred under chain-of-custody protocol to Waypoint Analytical Laboratories in Memphis, Tennessee for analysis of total lead content.

Down-to-earth partners. Sky's-the-limit solutions.

The EPA has established an action level for public water supply systems at 15 micrograms of lead per liter of water (15 µg/L). The further EPA recommends that schools remove water fountains and other outlets used for consumption if lead levels exceed 20 µg/L. Though this school uses water from the municipal water supply and therefore does not qualify as a public water supply system, Tioga recommends that the more conservative EPA action level of 15 µg/L be used in the decision making process as to the continued operation of the potable water sources at the school.

Results Based on Laboratory Analysis:

Table 1 below summarizes the sampling locations, laboratory analytical results, and EPA action level for lead in drinking water. Sample results with a "<" symbol did not contain lead content above the laboratory detection limit. Samples highlighted in yellow exceeded the EPA action level for lead.

**Table 1
Summary of Analytical Results
Whitehaven Elementary School
September 12, 2017**

Sample ID	Sample Location	Total Lead (µg/L)	EPA Action Level (µg/L)
34-1	Water Fountain Across from Room 121 (Bubbler)	32.3	15
34-2	Water Fountain Near Bookstore – Left	5.96	
34-3	Water Fountain Near Bookstore – Right	6.69	
34-4	Water Fountain Across from Room 116 - Left	<0.513	
34-5	Water Fountain Across from Room 116 – Right	<0.513	
34-6	Water Fountain Across from Room 122 (Bubbler)	58.2	
34-7	Water Fountain Across from Room 119 (Bubbler)	232	
34-8	Cafeteria Water Fountain - Left	11.8	
34-9	Cafeteria Water Fountain – Right	22.1	
34-10	Cafeteria Big Sink	1.34	
34-11	Cafeteria Small Sink	27.0	
34-12	Second Floor Teacher's Lounge Sink	<0.513	
34-13	Water Fountain Across from Room 212 - Left	<0.513	
34-14	Water Fountain Across from Room 212 - Right	<0.513	
34-15	Water Fountain Across from Room 214 - Left	<0.513	
34-16	Water Fountain Across from Room 214 - Right	<0.513	

(µg/L) = Micrograms of lead per liter of water (parts per billion)

A review of the laboratory analytical results of the water samples collected revealed five samples with total lead concentrations above the EPA action level for drinking water.

Recommendations:

Based upon the laboratory analytical results of the potable water samples collected from Whitehaven Elementary School, Tioga recommends that the water sources above the EPA action level remain out of use.

The EPA provides technical guidance for reducing lead in drinking water in schools published in the October 2006 revision of the “3Ts for Reducing Lead in Drinking Water in Schools”. Tioga recommends that a plan be developed and implemented in accordance with this guidance with additional testing to identify potential sources of lead in this school and to remediate these sources as they are identified. As the next step in determining the sources of lead contamination, Tioga recommends follow-up post-flush testing for water sources that exceeded the EPA action level.

Limitations

Potable water sources with elevated lead levels may potentially be present in areas of the property that are not addressed with this report. This investigation only included the potable water sources specifically addressed.

We appreciate the opportunity to provide you with this service. Should you have any questions regarding this report, please contact me at (901) 791-2432.

Sincerely,
TIOGA ENVIRONMENTAL CONSULTANTS, INC.



Eric Davis, CIE
Environmental Scientist

Enclosure: (1) Laboratory Analytical Report

9/14/2017

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis, TN, 38103

Ref: Analytical Testing
Lab Report Number: 17-255-0247
Client Project Description: 34 All
Project #24816.01

Dear Mr. Eric Davis:

Waypoint Analytical, Inc. received sample(s) on 9/12/2017 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2012) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Rendell H. Thomas

Randy Thomas
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

Alabama #40750	Louisiana #04015	VA NELAP #460181	Texas #T104704180-11-6	Arkansas #88-0650
Mississippi	California #2904	NC #415	Oklahoma #9311	Virginia #00106
Kentucky #90047	Tennessee #TN02027	EPA #TN00012	Kentucky UST #41	



06510

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis , TN 38103

Project 34 All
Information : Project #24816.01

Report Date : 9/14/2017

Report Number : **17-255-0247**

REPORT OF ANALYSIS

Received : 9/12/2017

Lab No : **91703**

Sample ID : **34-01**

Matrix: **Aqueous**

Sampled: **9/12/2017 5:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	32.3	µg/L	0.513	1	09/13/17 19:50	BKN	EPA-200.8

Lab No : **91704**

Sample ID : **34-02**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	5.96	µg/L	0.513	1	09/13/17 19:55	BKN	EPA-200.8

Lab No : **91705**

Sample ID : **34-03**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	6.69	µg/L	0.513	1	09/13/17 20:00	BKN	EPA-200.8

Lab No : **91706**

Sample ID : **34-04**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 20:05	BKN	EPA-200.8

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis , TN 38103

Project 34 All
Information : Project #24816.01

Report Date : 9/14/2017

Report Number : **17-255-0247**

REPORT OF ANALYSIS

Received : 9/12/2017

Lab No : **91707**

Sample ID : **34-05**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 20:16	BKN	EPA-200.8

Lab No : **91708**

Sample ID : **34-06**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	58.2	µg/L	0.513	1	09/13/17 20:21	BKN	EPA-200.8

Lab No : **91709**

Sample ID : **34-07**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	232	µg/L	0.513	1	09/13/17 20:50	BKN	EPA-200.8

Lab No : **91710**

Sample ID : **34-08**

Matrix: **Aqueous**

Sampled: **9/12/2017 6:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	11.8	µg/L	0.513	1	09/13/17 20:55	BKN	EPA-200.8

Qualifiers/ Definitions

DF

Dilution Factor

MQL

Method Quantitation Limit

06510

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis , TN 38103

Project 34 All
Information : Project #24816.01

Report Date : 9/14/2017

Report Number : **17-255-0247**

REPORT OF ANALYSIS

Received : 9/12/2017

Lab No : **91711**
Sample ID : **34-09**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:25**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	22.1	µg/L	0.513	1	09/13/17 21:06	BKN	EPA-200.8

Lab No : **91712**
Sample ID : **34-10**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	1.34	µg/L	0.513	1	09/13/17 21:11	BKN	EPA-200.8

Lab No : **91713**
Sample ID : **34-11**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	27.0	µg/L	0.513	1	09/13/17 21:16	BKN	EPA-200.8

Lab No : **91714**
Sample ID : **34-12**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:35**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 21:21	BKN	EPA-200.8

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis , TN 38103

Project 34 All
Information : Project #24816.01

Report Date : 9/14/2017

Report Number : **17-255-0247**

REPORT OF ANALYSIS

Received : 9/12/2017

Lab No : **91715**
Sample ID : **34-13**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 21:24	BKN	EPA-200.8

Lab No : **91716**
Sample ID : **34-14**

Matrix: **Aqueous**
Sampled: **9/12/2017 6:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 21:29	BKN	EPA-200.8

Lab No : **91717**
Sample ID : **34-15**

Matrix: **Aqueous**
Sampled: **9/12/2017 7:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 21:34	BKN	EPA-200.8

Lab No : **91718**
Sample ID : **34-16**

Matrix: **Aqueous**
Sampled: **9/12/2017 7:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.513	µg/L	0.513	1	09/13/17 21:39	BKN	EPA-200.8

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

Cooler Receipt Form

Customer Number: **06510**

Customer Name: **Tioga Environmental Consultants**

Report Number: **17-255-0247**

Shipping Method

☐ Fed Ex ☐ US Postal ☐ Lab ☐ Other :
☐ UPS ☒ Client ☐ Courier Thermometer ID:

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Number of coolers received	<input type="text" value="1"/>		
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Water - Sample containers properly preserved	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 – compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)	<input type="checkbox"/> Low concentration EnCore samplers (48 hr)		
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)	<input type="checkbox"/> Low conc pre-weighed vials (Sod Bis -14 d)		
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Signature:

Date & Time:



Kit ID:	0000085992
Initiated By:	Andy Parrish
Initiated Date:	9/8/2017
Project Comment	

CHAIN-OF-CUSTODY



Company Name Tioga Environmental Consultants	Company Number 06510	Client Project Manager/Contact <i>Eric Davis</i> Mr. Luke Hall	Purchase Order Number
Site Name <i>34 All</i>	Project Number <i>24816.01</i>	<input checked="" type="checkbox"/> <i>24 hour</i> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input checked="" type="checkbox"/> Client Drop Off Other
LIMS Project ID	Project Manager Phone # (901) 791-2432	Project Manager Email <i>edavis</i> hall@tiogaenv.com	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
9/12/17	0555	34-01	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0600	34-02	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0600	34-03	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0610	34-04	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0610	34-05	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0610	34-06	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0620	34-07	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0625	34-08	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	<i>Eric Davis</i>	<i>24 hr TAT</i>				
<input checked="" type="checkbox"/> Y/N	<input checked="" type="checkbox"/> Y/N		Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			<i>[Signature]</i>	9/12/17	1030	<i>[Signature]</i>	9/12/17	1030
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			<i>[Signature]</i>	9/12/17	1235	<i>[Signature]</i>		
<i>NA</i>			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
						<i>C. Dunlop</i>	9/12/17	12:35



Kit ID:	0000085992
Initiated By:	Andy Parrish
Initiated Date:	9/8/2017
Project Comment	

CHAIN-OF-CUSTODY



Company Name Tioqa Environmental Consultants	Company Number 06510	Client Mr. Luke Hall	
Site Name 34 All	Project Number 24816.01	<input checked="" type="checkbox"/> RUSH - Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input checked="" type="checkbox"/> Client Drop Off Other
LIMS Project ID	Project Manager Phone # (901) 791-2432	Project Manager Email edavis@tiaoqaenv.com	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
9/12/17	0625	34-09	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0630	34-10	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0630	34-11	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0635	34-12	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0645	34-13	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0645	34-14	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0705	34-15	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/12/17	0705	34-16	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Eric Davis		24 hour TAT			
<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
Blank/Cooler Temp								
NA						C. Dunlap	9/12/17 12:35	

2/4